# Chapter 9
# IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMINTMENTS

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*Operations at the alternative candidate site would require an irreversible and irretrievable commitment of resources. A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource. For example, as a landfill receives waste, the primary impact is a limit on waste capacity. The secondary impact is a limit on future land use options. An irretrievable commitment refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. This section discusses four major resources: land, energy, material, and water that have the potential to be committed irreversibly or irretrievably under the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS) alternatives.*

## 9.1 LAND

The land requirements in support of Complex Transformation construction would be modest in relation to the existing nuclear weapons facilities and would represent an irreversible commitment of the land. Most of the larger facilities would be constructed on disturbed land. For the aboveground construction alternatives, the land would not be restored to its original condition and the land would not be available or suitable for other uses. The same is true of associated access roads. Once these facilities end their useful life, they could be returned to open space uses if the buildings, roads and other structures were removed, areas cleaned up, and the land revegitated. Alternatively, the facilities could be modified for use in other nuclear programs. Therefore, the commitment of this land is not completely irreversible.

However, land rendered unfit for other purposes, such as that set aside for radiological and hazardous chemical waste disposal facilities, or facilities which have experienced leaks or other such unplanned releases, represent an irreversible commitment because wastes and other radioactive or hazardous chemical substances in below-ground settings or disposal areas may not be completely removed at the end of the project's useful life. It is possible that the land could not be restored to its original condition or even to minimum cleanup standards, nor could the site feasibly be used for any other purposes following closure of the disposal facility. This land could be permanently unusable because the substrata would not be available for other potential intrusive uses such as mining, utility infrastructure, or foundations for other buildings. However, the surface area appearance and biological habitat lost during construction and operation of the facilities could be restored to a large extent.

## 9.2 ENERGY

The irretrievable commitment of resources during construction and operation of the facilities would include the consumption of fossil fuels used to generate heat and electricity for the sites. Energy would also be expended in the form of diesel fuel, gasoline, and oil for construction equipment and transportation vehicles. The amounts of irretrievable energy required to construct and operate new or modified facilities are estimated in Chapter 3. Resource requirements for the larger construction alternatives are shown in Table 9.2-1 and Table 9.2-2.

**Table 9.2-1—Irreversible and Irretrievable Construction Commitments**

| Requirement | Stand-alone CPC at SRS, Y-12, Pantex, NTS | CPC at LANL | LANL Upgrade TA-55/PF4 | UPF at Y-12 | CUC | AD/HE |
|---|---|---|---|---|---|---|
| Electrical Energy (MWh) | 6,600 | 6,000 | .3/1.5 | 26.4 | 30 | 277 |
| Concrete (cubic yards) | 308,000 | 280,000 | 3,715/32,750 | 200,000 | 230,000 | 324,500 |
| Steel (tons) | 44,000 | 40,000 | 401/3,850 | 27,500 | 29,500 | 18,050 |
| Liquid Fuels (million gals) | 4.8 | 4.4 | 0/0 | .25 | .325 | 21.35 |
| Gases (cubic yards) | 19,800 | 18,000 | 0/450 | NA | NA | NA |
| Water (million gals) | 20.9 | 20.9 | 2.1/.55 | 4 | 5.2 | 2.35 |
| Total (worker years) | 2900 | 2,650 | 1100/430 | 2,900 | 4000 | 6,800 |
| Peak (workers) | 850 | 770 | 300/190 | 900 | 1300 | 3,800 |

NA – Not Applicable

**Table 9.2-2—Irreversible and Irretrievable Operation Commitments**

| Resources | CPC at LANL [200 pits per year (ppy) (surge)] | CPC at SRS, Y-12, Pantex, NTS [200 ppy (surge) plus R&D] | LANL Upgrade | UPF at Y-12 | CUC | AD/HE |
|---|---|---|---|---|---|---|
| Electrical Consumption (MWh) | 48,000 | 48,000 | 44,000 | 168,000 | 168,000 | 52,000 |
| Peak Electrical (MWe) | 22.0 | 24.0 | 10 | 18.4 | 18.4 | 11.9 |
| Diesel Fuel (gallons) | 21,000 | 23,000 | NA | NA | NA | 367 |
| Nitrogen[c] ($yd^3$) | 81,000 | 89,000 | NA | NA | NA | NA |
| Argon[c] ($yd^3$) | 2,000 | 2,200 | NA | NA | NA | NA |
| Domestic Water (million gals) | 14 | 15.5 | 10 | .105 | .105 | 130 |
| Total workers | 1,173 | 1,780 | 680 | 600 | 935 | 1,785 |
| Radiation workers | 675 | 1,150 | 458 | 315 | 490 | 400 |

NA – Not Applicable

## 9.3 MATERIAL

The irreversible and irretrievable commitment of material resources during the entire lifecycle of the existing or proposed facilities for Complex Transformation includes construction materials that cannot be recovered or recycled, materials that are rendered radioactive but cannot be decontaminated, and materials consumed or reduced to unrecoverable forms of waste. Where construction is necessary, materials required include wood, concrete, sand, gravel, plastics, steel, aluminum, and other metals. At this time, no unusual construction material requirements have been identified either as to type or quantity. The construction resources, except for those that can be recovered and recycled with present technology, would be irretrievably lost. However, none of these identified construction resources is in short supply and all are readily available in the vicinity of the locations being considered for new construction. The commitment of materials to be manufactured into new equipment that cannot be recycled at the end of the project's useful lifetime is irretrievable. Consumption of operating supplies, miscellaneous chemicals, and gases, while irretrievable, would not constitute a permanent drain on local sources or involve any material in critically short supply in the United States as a whole. Materials consumed or reduced

to unrecoverable forms of waste, such as uranium, are also irretrievably lost. However, strategic and critical materials, or resources having small natural reserves, are of such value that economics promotes recycling. Plans to recover and recycle as much of these valuable, depletable resources as is practical would depend upon need. Each item would be considered individually at the time a recovery decision is required. Some of the larger material needs for construction and operation of the major proposed facilities are shown in Table 9.2-1 and Table 9.2-2.

## 9.4 WATER

Water is a scarce resource in many parts of the United States, and must not be taken for granted. Many of the Complex Transformation new construction alternatives have large water requirements, even though they have used all existing conservation technology available and designed product fabrication practices to minimize water needs. To the extent water is recoverable it has been designed into the facility planning process. None of the water requirements for any of the new construction alternatives and alternative siting locations pose any issues. Water requirements for construction and operation of the larger alternative new construction facilities are shown in Table 9.2-1 and Table 9.2-2.